The normal distribution of pressure over the North Atlantic in December shows a belt of high pressure, with values above 30.10 (764), stretching across the ocean between the 30th and 40th parallels. From this belt there is a marked gradient to Iceland and southern Greenland, where the pressure is below 29.50 (749). There is usually an increase of pressure over the southern and eastern parts of the ocean in December. Between the Azores and the coast of the United States, and thence northward, there is a decrease of pressure, the decrease being most marked within the Iceland area of low pressure, where it exceeds .20.

The storms of December usually follow two principal tracks which diverge from the main continental track east of Newfoundland, one running directly into the Iceland low area, the other skirting the southern quadrants of the Iceland low area and passing north of the British Isles. The average velocity of North Atlantic storms in December is about 21 statute miles per hour, and an average of 3 storms traverse the ocean from the American to the European coasts in that month.

The severest storms of December, 1892, prevailed over mid-ocean from the 13th to 17th and 20th to 23d. Six storms advanced eastward from the American coast, 2 of which reached European waters. The following is a description of the storms that appeared during the month:

The month opened with low area XV*a* for November central south of western Nova Scotia. By the 2d this storm had passed slowly eastward, attended by south to west gales of force 10 to 11 between the 50th and 56th meridians. The morning of the 3d the storm was central south of Newfoundland, with pressure about 29.40 (747), and by the morning of the 4th had united east of Newfoundland with low area I which had advanced from the westward. From that position the storm apparently recurved westward and the morning of the 5th was central south of Newfoundland. Moving northeastward the storm disappeared north of the region of observation after the 7th.

From the 2d to the 4th a storm of moderate strength apparently passed eastward over the British Isles. On the 7th low area II passed south of east over Nova Scotia, and the morning of the 8th was central off the south edge of the Grand Banks, after which it disappeared. On the 12th a storm appeared north of the Grand Banks and passed eastward to mid-ocean by the 15th, where it remained nearly stationary until the 17th attended by southwest to northwest gales of force 10 to 12, after which it apparently passed north of the British Isles. The passage of a storm over or north of the British Isles was indicated by reports of the 10th to 12th.

During the 17th low area VI passed off the North Carolina coast, and the morning of the 17th was central east of the Grand Banks, with pressure about 28.80 (731), and northwest gales of force 9 to 11. By the 19th the storm had changed position but slightly and southwest winds of hurricane force were encountered near the 40th meridian. From the 20th to the 23d this storm occupied mid-ocean, with pressure falling to 28.20 (716) on the 22d and to 28.30 (719) on the 23d, and westerly gales of force 9 to 11 between the 30th and 40th meridians, after which it apparently shifted position to the westward and united with an area of low pressure which appeared over the Gulf of Saint Lawrence on the 24th.

From the 25th to the 27th the pressure continued very low over and near Newfoundland, barometer readings below 29.00 (736) being reported on the 25th and 26th. By the 28th this storm had advanced to mid-ocean, where it remained nearly stationary until the 29th. On the 30th it occupied the ocean west of Ireland, and at the close of the month was apparently central over the Bay of Biscay, with pressure below 29.50 (749). On the 27th low area IX moved northeastward off the south Atlantic coast, with pressure below 29.50 (749), and northeast gales of force 9. The morning of the 28th the storm was north of Bermuda. By the 29th it had reached mid-ocean, and by the 30th it had united with the storm that occupied the ocean west of Ireland.

OCEAN ICE IN DECEMBER.

Arctic ice was not reported for December, 1892. In December, 1882, 1883, 1884, 1886, and 1888 no Arctic ice was reported near Newfoundland and the Grand Banks. In 1885 several icebergs were observed off the Newfoundland coast the early part of the month. In 1887 a small iceberg was reported in N. 46° 10′, W. 47° 28′ on the 26th, and a small iceberg in N. 48° 20′, W. 48° 40′ on the 28th. In 1889 large quantities of Arctic ice were reported over and near the Grand Banks. In 1890 a large berg was observed in N. 49° 39′, W. 47° 50′ on the 13th.

OCEAN FOG IN NOVEMBER.

The limits of fog belts west of the 40th meridian, as determined by reports of shipmasters, are shown on Chart I by dotted shading. East of the 55th meridian fog was reported on 10 dates; between the 55th and 65th meridians on 3 dates; and west of the 65th meridian on 4 dates. Compared with the corresponding month of the last 5 years the dates of occurrence of fog east of the 55th meridian numbered 6 more than the average; and west of the 55th meridian 2 less than the average. The occurrence of fog along the steamship tracks west of the 40th meridian and at stations of the Weather Bureau on the New England and middle Atlantic coasts generally attended the approach or passage of general storms.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of mean temperature over the United States and Canada for December, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

Over the greater part of the Florida Peninsula and in the extreme lower Rio Grande valley the mean temperature was above 60. It was above 55 along the immediate Gulf coast and in the Colorado Desert, California, and the mean readings were above 50 over the southern half of the Gulf States, in the lower Colorado and Gila valleys, and along the California coast from San Francisco southward. The mean temperature was lowest in the region north of North Dakota, where it was below zero. It was below 10 over the northern half of Minnesota, in North Dakota, northeastern Montana, and at Climax, Colo., and the mean readings were below 20 over northern New England, Upper Michigan, Wisconsin, Iowa, and north of a line traced from east-central Nebraska to northwestern Montana. The mean temperature was also below 20 in the middle Rocky Mountain region.

DEPARTURE FROM NORMAL TEMPERATURE.

The mean temperature was generally below the normal, the only excess being shown in New Brunswick, over the Florida Peninsula, and on the Georgia and South Carolina coasts. The most marked departure below the normal temperature was noted in an area extending from Wisconsin to eastern Colorado and Oklahoma, where the mean readings were 5 to 8 below the normal. In an area extending from eastern Montana and the western Dakotas to northern Utah the month was 5 to 7 colder than usual. The departure below the normal was 5 to 6 in southeastern Washington and Arizona. In the localities named where the temperature was above the normal the excess was less than 2.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for December for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for December, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for December during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of Dec.	(2) Length of record.	(3) Mean for Dec., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for December.			
					Highest.	Year.	Lowest.	Year.
Arizona.	°	*Years*	°	°	°		°	
Fort Apache	37.7	21	34.6	— 3.1	45.0	1889	27.6	1891
Fort Mohave	53.3	20	49.4	— 3.9	59.2	1875	47.6	1891
Whipple Barracks	38.0	20	33.4	— 4.6	42.2	1889	31.4	1891
Arkansas.								
Keesees Ferry	39.9	11	36.2	— 3.7	55.3	1889	29.1	1884
California.								
Fort Bidwell	33.2	19	30.1	— 3.1	39.9	1886	25.2	1873
Riverside	52 9	10	51.0	— 1.9	56.5	1882	48.3	1891
Colorado.								
Las Animas	30.9	9	28.5	— 2.4	41.9	1889	19.5	1884
Florida.								
Merritts Island	63.1	10	64.9	+ 1.8	68.0	1891	58.0	1885
Georgia.								
Forsyth	49.9	18	51.4	+ 1.5	61.3	1889	39.8	1876
Idaho.								
Boise Barracks	33.1	17	33.4	+ 0.3	37.7	1886	28.1	1884
Fort Sherman	31.5	9	22.6	— 8.9	37.9	1890	16.0	1884
Indiana.								
Lafayette	30.3	11	27.2	— 3.1	43.8	1889	21.3	1880
Indian Territory.								
Fort Supply	38.3	12	29.9	— 8.4	49.2	1889	29.9	1887, 1892
Iowa.								
Cresco	17.9	21	13.6	— 4.3	34.0	1877	4.5	1876
Kansas.								
Eureka Ranch	33.4	9	25.0	— 8.4	43.6	1889	21.3	1884
Independence	35.2	20	32.3	— 2.9	49.3	1889	25.4	1884
Salina	33.4	10	26.9	— 6.5	44.4	1889	23.2	1885
Louisiana.								
Grand Coteau	56.1	10	55.4	— 0.7	65.0	1889	51.8	1887
Maine.								
Orono	21.3	22	21.3	0.0	31.6	1891	11.4	1890
Maryland.								
Cumberland	32.1	21	31.6	— 0.5	43.2	1889	26.0	1880
Michigan.								
Kalamazoo	29.8	16	25.0	— 4.8	40.2	1889	16.7	1876
Missouri.								
Sedalia	37.3	7	29.1	— 8.2	49.4	1889	25.7	1886
Montana.								
Fort Custer	23.4	13	.....	.....	33.1	1885	5.6	1884
Nebraska.								
Fort Robinson	29.0	8	25.2	— 3.8	38.0	1889	12.4	1884
Genoa (near)	23.8	17	22.0	— 1.8	35.4	1889	11.8	1879
Nevada.								
Browns	35.2	20	34.8	— 0.4	42.1	1871	26.8	1873
Carson City	34.3	15	30.2	— 4.1	40.8	1886	29.1	1891
New Hampshire.								
Hanover	20.8	21	20.2	— 0.6	30.5	1881	10.2	1872
New Mexico.								
Deming	46.3	10	50.1	+ 3.8	53.1	1884	38.4	1891
Fort Wingate	32.8	21	31.2	— 1.6	41.0	1889	23.7	1887
New York.								
Cooperstown	27.3	21	21.7	— 5.6	33.9	1891	14.7	1876
Plattsburg Barracks	21.8	21	19.6	— 2.2	33.8	1891	11.3	1890
North Carolina.								
Lenoir	38.4	20	37.7	— 0.7	48.9	1889	29.1	1876
Oklahoma.								
Fort Reno	40.1	9	35.8	— 4.3	52.6	1889	27.9	1884
Fort Sill	40.4	20	37.7	— 2.7	52.3	1889	31.0	1884
Oregon.								
Bandon	46.9	8	45.1	— 1.8	52.5	1888	43.6	1884
Pennsylvania.								
Dyberry	25.7	21	22.6	— 3.1	34.6	1891	17.3	1876
Grampian	25.9	21	24.6	— 1.3	37.0	1877	16.0	1876
Wellsboro	29.9	13	24.0	— 5.9	39.5	1881	22.2	1890

Departures from normal temperature—Continued.

State and station.	(1) Normal for the month of Dec.	(2) Length of record.	(3) Mean for Dec., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for December.			
					Highest.	Year.	Lowest.	Year.
South Carolina.	°	*Years*	°	°	°		°	
Statesburg	47.9	11	46.4	— 1.5	56.6	1889	43.6	1882
South Dakota.								
Fort Sully	19.2	21	16.4	— 2.8	30.0	1881	2.9	1879
Texas.								
Austin	50.2	20	49.8	— 0.4	65.5	1889	42.1	1872
Silver Falls	46.2	6	37.6	— 8.6	56.1	1889	37.6	1892
Utah.								
Terrace	27.8	20	28.3	+ 0.5	37.0	1888	17.0	1878
Vermont.								
Strafford	22.1	19	19.5	— 2.6	31.2	1891	13.4	1890
Virginia.								
Dale Enterprise	38.8	12	30.8	— 8.0	49.0	1889	28.4	1882
Washington.								
Fort Townsend	41.0	17	38.0	— 3.0	45.3	1885	33.0	1884
West Virginia.								
Parkersburg	38.8	11	31.8	— 7.0	47.2	1889	29.6	1886
Wisconsin.								
Embarrass	22.0	21	14.0	— 8.0	35.4	1877	6.5	1872
Madison	23.3	14	18.3	— 5.0	38.4	1877	10.8	1876
Wyoming.								
Fort Washakie	23.6	9	16.4	— 7.2	29.6	1889	16.4	1892

YEARS OF HIGHEST MEAN TEMPERATURE FOR DECEMBER.

The highest mean temperature for December was noted generally over New England and eastern New York in 1891; over northern North Dakota, the northern plateau region, and southern California in 1890; from the middle and southern Rocky Mountain regions eastward to the middle and south Atlantic coasts in 1889; along the north Pacific coast and over Oregon, northern California, and northern Nevada in 1886; on the northeast slope of the Rocky Mountains in 1885; and from the upper Mississippi valley over the upper lake region in 1877.

YEARS OF LOWEST MEAN TEMPERATURE FOR DECEMBER.

At Narragansett Pier, R. I., Silver Falls, Tex., Fort Supply, Ind. T., Rapid City, S. Dak., and Fort Washakie, Wyo., the mean temperature for the current month was the lowest noted for December during the respective periods of observation. The lowest mean temperature for December was noted at points in California, Nevada, and New Mexico in 1891; in the middle and northern Rocky Mountain regions in 1884; and generally east of the Mississippi River and south of the Lake region in 1876.

MAXIMUM TEMPERATURE.

At Memphis, Tenn., Galveston, Tex., and Wilmington, N. C., the maximum temperature for the current month was as high as previously reported for December.

The highest temperature reported by a regular station of the Weather Bureau for December, 1892, was 82, at Titusville, Jupiter, Tampa, and Key West, Fla. The maximum temperature rose to 81 at Los Angeles, Cal., and was 80 at San Antonio and Corpus Christi, Tex. North of a line traced from the Virginia coast to west-central Georgia, thence to north-central Kentucky, thence to southern New Mexico, and thence to the California coast south of San Francisco, the maximum values were above 70. At Saint Vincent, Minn., the highest temperature reached was 34, on the 1st, and the maximum readings were below 40 over the north part of the upper lake region, in northern Minnesota, northern North Dakota, and northeastern Montana. Reports of voluntary observers show maximum temperature above 80 at points in the Southern and Southwestern States, and in southern Arizona and southern California.

MINIMUM TEMPERATURE.

At Nantucket and Vineyard Haven, Mass., and Walla Walla, Wash., the minimum temperature was the lowest reported for December during the respective periods of observation.

The lowest temperature reported by a regular station of the Weather Bureau was —34, at Saint Vincent, Minn., on the 23d. The minimum temperature was below —20 over northern Minnesota, North Dakota, and on the northeast slope of the Rocky Mountains; it was below —10 in northern New Hampshire and northern Vermont, and north of a line traced from western Upper Michigan to Chicago, Ill., thence to southern Colorado, and thence northwestward to extreme western Montana. The line of zero temperature is traced from the Massachusetts coast, over the lower lake region, thence to Oklahoma, thence over northern New Mexico and Utah, and thence northward over Idaho. At Key West, Fla., the minimum temperature was 54.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line crossing the Florida Peninsula north of Titusville and Tampa. The western limit of freezing weather is shown by a line traced just inside the California coast line south of the 40th parallel.

RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature occurred over western Missouri and southeastern Colorado, where it exceeded 80. From the west-central states the monthly ranges decreased to less than 40 over northern Lower Michigan, and increased thence eastward to more than 45 on the south New England coast. The monthly range decreased southeastward to less than 30 over extreme southern Florida, southward to less than 60 on the immediate Gulf coast, and westward to less than 30 at points along the immediate middle and north Pacific coasts.

PERIODS OF LOW TEMPERATURE.

From the 1st to the 3d a cold wave advanced from Utah and southern Colorado to the Mississippi Valley, with temperature 12 to 18 below zero in the British Northwest Territory on the 2d and 3d. This cold wave did not reach the Atlantic coast states. From the 5th to the 9th a cold wave advanced from the northeast slope of the Rocky Mountains to the south Atlantic states. From the 8th to 11th a cold wave advanced from the Saskatchewan Valley to the middle Atlantic and New England states. Attending the advance of this cold wave the temperature fell 40 to 50 over northern North Dakota, and reached —20 at Bismarck, N. Dak., on the 9th. On the 10th the line of freezing weather reached Arkansas, and on the 12th freezing weather was reported in northern South Carolina.

From the 18th to the 20th a cold wave advanced from the extreme northwest to the Gulf States and New England. On the 19th the temperature reached —16 at Saint Vincent, Minn., and the line of zero temperature reached Keokuk, Iowa. On the 21st the temperature fell to freezing over the north part of the Gulf States. From the 20th to the 22d a severe cold wave overspread the Northwest. On the 21st the temperature fell to —30 at Swift Current, N. W. T., and was below zero in South Dakota. On the 22d a reading of —24 was noted at Moorhead, Minn.

A severe cold wave advanced from the Northwest to the Gulf and south Atlantic coasts from the 25th to the 27th. On the 25th the temperature reached —32 at Saint Vincent, Minn., and fell to zero in northern Missouri. On the 26th the line of zero temperature reached Arkansas and freezing weather extended to the Gulf coast. On the 27th the line of freezing weather reached northern Florida. During the 30th and 31st a cold wave advanced from the Northwest to the west Gulf coast.

FROST.

Frost injurious to vegetation was reported as follows: On the 9th heavy frost injured tender vegetation in the Mission Valley, near San Diego, Cal. A report from Los Angeles, Cal., dated the 10th stated that frost injured tender plants and vines in exposed places. At Fall Brook, Cal., frost damaged tomatoes on the 12th. On the 27th, at Corpus Christi, Tex., heavy frost killed vegetation, and ice three-fourths of an inch in thickness formed.

Heavy frost was reported generally over interior and northern parts of the Florida Peninsula on the 29th. Timely warning was given and much loss was avoided by covering plants and the protection afforded by smudge fires. At Deland, Fla., the temperature fell to 28 and was below the freezing point 7 hours, one and one-half hour of which was after sunrise; orange trees were slightly nipped in that locality. From the 26th to the 29th the weather was exceptionally cold over the Gulf States. In Louisiana tender vegetation was killed, sugar cane still standing was frozen, and orange trees in southern parishes were slightly nipped.

The first light frost of the season was reported on the 6th at Gila Bend, Ariz., and San Diego and San Francisco, Cal.

The first heavy frost of the season was reported as follows: 6th, Tucson, Walnut Ranch, and Wilgus, Ariz. 7th, El Paso, Tex. 8th, Astoria, Oregon; East Sound, Wash. 10th, Boerne, Brownwood, and Burnet, Tex. 12th, Fall Brook, Cal. 16th, Farleys Camp, Ariz.; Duarte, Cal. 17th, Fort Canby, Wash. 20th, Red Rock, Ariz. 21st, Napa, Cal. 23d, Pensacola, Fla. 26th, Emilie, La.; Brenham and Galveston, Tex. 27th, Corpus Christi, Cuero, and Flower Bluff, Tex. 28th, Eustis, Fla. 29th, Federal Point, Homeland, Jupiter, Moseley Hall, Micco, Tampa, and Titusville, Fla.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for December, 1892, as determined from reports of more than 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In December the monthly precipitation is usually greatest on the north Pacific coast, where it exceeds 10.00; the normal amount exceeds 8.00 along the Pacific coast north of the 38th parallel, in parts of northeastern California, and in a small area in northeastern Louisiana; and exceeds 4.00 from the middle and east Gulf coasts to the middle Ohio valley, along the immediate Atlantic coast from North Carolina to southern New England, and over Nova Scotia and southeastern Maine. Except in parts of the northern plateau region, the monthly precipitation is less than 1.00 over the greater part of the Rocky Mountain and plateau regions, and thence over Kansas, Nebraska, the Dakotas, and Minnesota.

In December, 1892, the monthly precipitation exceeded 10.00 over the greater part of northern California, and along the Oregon and Washington coasts. The monthly amount was also in excess of 10.00 from western Tennessee over eastern and southern Arkansas, and in the vicinity of Pales-